

POWER ADAPTER NOTICE:

1. This product should only be used with Black Box Supplied Power Unit model numbers PWPB112511 [US] or LMC203A [Universal].

2. When used in a standalone configuration, this product must be used with a Listed Direct Plug-In Power Unit marked "Class 2" and rated at 9VDC, 1 Amp.

NOTE: If mounting with a safety ground attachment, use the safety ground screw at the rear of the unit.

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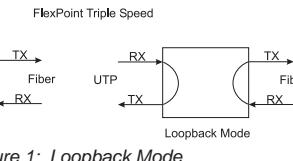


Figure 1: Loopback Mode

WARNING!
Before inserting the Power Adapter, verify that the power on the unit is appropriate for your AC line voltage source.

INSTALLATION PROCEDURE

1.) Configure the appropriate FlexPoint Triple Speed DIP-Switch settings.

2.) Connect the UTP port via a Category 5 or better cable to a 10BASE-T, 100BASE-TX or 1000BASE-T Ethernet device.

3.) When using fixed fiber port models, connect the appropriate multimode or single-mode fiber cable to the fiber port of the installed module. It is important to ensure that the transmit (Tx) is attached to the receive side of the device at the other end and the receive (Rx) is attached to the transmit side.

4.) When using the SFP model, insert the SFP Fiber transceiver into the Port 1 SFP receptacle on the Triple Speed.

NOTE: The release latch of the SFP Fiber transceiver must be in the closed (up) position before insertion.

Connect the appropriate multimode or single-mode fiber cable to the fiber port of the installed module.

LOOPBACK

The FlexPoint Triple Speed has the capability to provide loopback to aid in installation and maintenance. A DIP-switch is used to enable loopback on the module (see page 6). Figure 1 shows the module in normal and loopback modes.

NOTE: Connecting two converters with both set to RFD mode is not supported and will cause a "deadly embrace" lockup.

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LINK MODES

In order to accommodate different user needs, the Triple Speed supports four different link modes (see Fig. 2).

In Link Segment (LS), a port transmits a Link signal independently of any received Link at any other port. For example, the UTP transmits a Link regardless of the fiber receiving a Link [Fig. 2(a) & (b)].

In Link Propagate (LP), a port transmits a Link signal only when receiving a Link at its other port. For example, the UTP transmits a Link only when receiving a Link at the fiber receiving a Link [Fig. 2(c)].

In Remote Fault Detection + Link Segment (RFD+LS), the fiber port transmits a Link signal only when receiving a Link at the fiber port. As a result, fiber faults (no Link received at the fiber) are looped-back and can be reported to the network core [Fig. 2(d)].

In Remote Fault Detection + Link Propagate (RFD+LP), the UTP port transmits a Link signal only when receiving a Link at the fiber port. The fiber port transmits a Link signal only when receiving Link signals at both the fiber port and the UTP port. As a result, fiber faults (no Link received at the fiber) are propagated forward and looped back for fault reporting at both the network core and the customer location [Fig. 2(e)].

NOTE: Connecting two converters with both set to RFD mode is not supported and will cause a "deadly embrace" lockup.

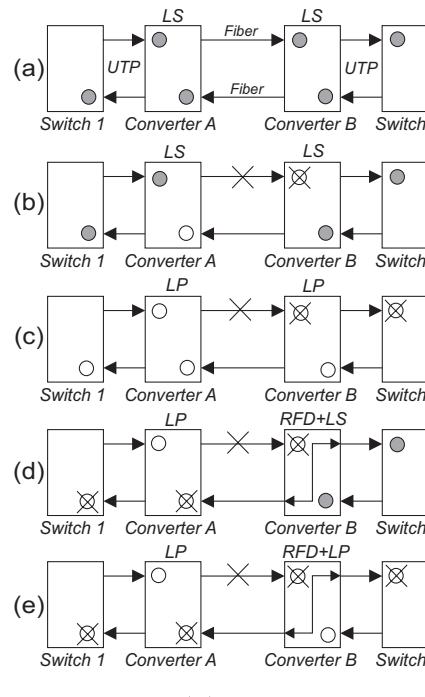


Figure 2: Link Modes

● LED On ✘ LED Off

○ LED Status depends on connected device

DIP-SWITCHES

F/O Manual/Auto "Man/AN" DIP-Switch

Setting this DIP-Switch to Auto-Negotiate "AN" (factory setting) enables the fiber port to determine duplex mode automatically.

If the connected device cannot provide the proper signal to indicate its own mode of operation, set this DIP-Switch to Manual "MAN." This feature allows connections with legacy manual negotiation devices that do not support auto-negotiation.

NOTE: When the fiber port is configured for Manual Mode, a link may not occur with the connected device. Configure both devices to Manual mode to establish a link.

F/O Speed "100/1000" DIP-Switch:

The Triple Speed supports 100BASE-FX and 1000BASE-X SFPs. This DIP-switch is used to configure the unit for the speed of SFP used. Setting this DIP-switch to "1000" enables the fiber port to accept 1000BASE-X SFPs. Setting this DIP-switch to "100" enables the fiber port to accept 100BASE-FX SFPs.

UTP Configuration DIP-Switches:

See the UTP Modes table on page 7.

Pause "On/Off" DIP-Switch:

In auto-negotiation mode, setting this DIP-switch to "On" allows the unit to advertise as Symmetrical and Asymmetrical Pause capability. In auto-negotiation mode, setting the DIP-switch to "Off" causes the unit to advertise no Pause capability. In the manual mode, this DIP-switch determines the Symmetrical Pause behavior.

Loopback "Off/On" DIP-Switch:

Setting this DIP-switch "On" enables loopback on the fiber and UTP ports (see Figure 1).

Link Modes:

See the following table for configuring link modes:

SW9 "LS/LP"	SW10 "RFD/Normal"	Result
LS	Normal	Enables Link Segment mode (LS).
LP	Normal	Enables Link Propagate mode (LP).
LS	RFD	Enables Remote Fault Detection mode plus Link Segment mode (RFD+LS).
LP	RFD	Enables Remote Fault Detection mode plus Link Propagation mode (RFD+LP).

NOTE: RFD is only available when the fiber port is operating in manual mode.

REMOTE FAULT

Each port will generate an "IEEE remote_fault indicator" when the incoming signal to the port is lost. When a port is configured for auto-negotiation, it will set the remote fault bit "high" in the AN advertisement when the port detects a loss of incoming signal. See LED Indicators table on page 8 for specifics on how the unit reports the detection of this signal.

When the fiber port is operating in 100BASE-FX, a loss of incoming signal will cause the port to generate a Far-End-Fault indicator pattern. See LED Indicators table on page 8 for specifics on how the unit reports the detection of this signal.

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UTP MODES

SW3 AN/MAN	SW4 10/100/ 1000	SW5 10/100	SW6 FDx/HDx	UTP Mode of Operation
AN	1000	NA	FDX	Configured for Auto Negotiation. (1000F, 1000H, 100F, 100H, 10F, 10H)
AN	1000	NA	HDx	Configured for Auto Negotiation. (1000H, 100F, 100H, 10F, 10H)
AN	10-100	100	FDX	Configured for Auto Negotiation. (100F, 100H, 10F, 10H)
AN	10-100	100	HDx	Configured for Auto Negotiation. (100H, 10F, 10H)
AN	10-100	10	FDX	Configured for Auto Negotiation. (10F, 10H)
AN	10-100	10	HDx	Configured for Auto Negotiation. (10H)
MAN	1000	NA	FDX	Configured for Auto Negotiation. (1000F)
MAN	1000	NA	HDx	Configured for Auto Negotiation. (1000H)
MAN	10-100	100	FDX	Port forced to 100 FDX
MAN	10-100	100	HDx	Port forced to 100 HDX
MAN	10-100	10	FDX	Port forced to 10 FDX
MAN	10-100	10	HDx	Port forced to 10 HDX
When the module is configured for auto-negotiation, the module will advertise in the order shown in the parenthesis.				

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LED INDICATORS

LED Function "Legend"	Color	Off State	On / Blinking State
Power / Test "Power"	Green	No power	On: Module has power Blinking: Module in loopback mode
F/O AN F/O-Auto-Neg*	Green	Port configured for manual negotiation	On: Fiber port configured for AN Blinking: Fiber port configured for AN but establishes link in manual mode
F/O Speed 100 F/O-100*	Green	Not connected at 100Mbps	On: Fiber port linked at 100Mbps Blinking (10Hz): Link activity at 100Mbps Blinking (1Hz): Signal detected but port unable to establish a link
F/O Speed 1000 F/O-1000*	Green	Not connected at 1000Mbps	On: Fiber port linked at 1000Mbps Blinking (10Hz): Link activity at 1000Mbps Blinking (1Hz): Signal detected but port unable to establish a link Pattern Blinking: AN remote Fault bit detected
UTP Duplex UTP-FDX*	Green	Half-Duplex	On: UTP port in Full-Duplex
UTP AN UTP-Auto-Neg*	Green	Port configured for manual negotiation	On: UTP port configured for AN Blinking: UTP port configured for AN but in manual mode
UTP Speed 100 UTP-100*	Green	Not connected at 100Mbps	On: UTP port linked at 100Mbps Blinking (10Hz): Link activity
UTP Speed 1000 UTP-1000*	Green	Not connected at 1000Mbps	On: UTP port linked at 1000Mbps Blinking (10Hz): Link activity
UTP Speed 10 UTP-100* + UTP-1000*	Green	Not connected at 10Mbps	On: UTP port linked at 10Mbps Blinking (10Hz): Link activity Pattern Blinking: Detecting "remote_fault" (AN) on UTP port
"UTP Auto-Neg" + "UTP-100*" + "UTP-1000"	Green	-	Blinking (1Hz): Unable to establish AN link on the UTP port

Model Type	Triple Speed	
Protocols	IEEE 802.3 10BASE-T, 100BASE-TX, 1000BASE-T, 100BASE-FX, 1000BASE-X	
Frame Size	10,240 byte max. frame size	
UTP Cable	RJ-45, Category 5 and higher	
Fiber Cables	Multimode: 50/125, 62.5/125, 100/140µm Single-mode: 9/125µm	
UTP Connectors	RJ-45	
Fiber Connectors	LC (SFP), SC, ST	

UTP MODES

SW3 AN/MAN	SW4 10/100/ 1000	SW5 10/100	SW6 FDx/HDX	UTP Mode of Operation
AN	1000	NA	FDX	Configured for Auto Negotiation. (100F, 100H, 10F, 10H)
AN	1000	NA	HDX	Configured for Auto Negotiation. (100H, 10F, 10H, 10H)
AN	10-100	100	FDX	Configured for Auto Negotiation. (100F, 100H, 10F, 10H)
AN	10-100	100	HDX	Configured for Auto Negotiation. (100H, 10F, 10H)
AN	10-100	10	FDX	Configured for Auto Negotiation. (10F, 10H)
AN	10-100	10	HDX	Configured for Auto Negotiation. (10H)
MAN	1000	NA	FDX	Configured for Auto Negotiation. (100F)
MAN	1000	NA	HDX	Configured for Auto Negotiation. (100H)
MAN	10-100	100	FDX	Port forced to 100 FDX
MAN	10-100	100	HDX	Port forced to 100 HDX
MAN	10-100	10	FDX	Port forced to 10 FDX
MAN	10-100	10	HDX	Port forced to 10 HDX

When the module is configured for auto-negotiation, the module will advertise in the order shown in the parenthesis.

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FlexPoint™ Triple Speed 10/100/1000 UTP to 100/1000 Ethernet Media Converter User Manual

US Power Supplies	International Power Supplies
LMC1017A-SFP	LMC1017AE
LMC1017A-MMST	
LMC1017A-MMSC	
LMC1017A-SMST	
LMC1017A-SMSC	
LMC1017A-SMSC-LH	

CUSTOMER SUPPORT Order toll-free in the U.S.: Call 877-877-BBOX (outside U.S. call 724-746-5500)

INFORMATION FREE technical support 24 hours a day, 7 days a week; Call 724-746-5500 or fax 724-746-0746
Mailing address: Black Box Corporation,
1000 Park Drive, Lawrence, PA 15055-1018
Web site: www.blackbox.com
E-mail: info@blackbox.com

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NOTE: If mounting with a safety ground attachment, use the safety ground screw at the rear of the unit.

LED INDICATORS

LED Function "Legend"	Color	Off State	On / Blinking State
Power / Test "Power"	Green	No power	On: Module has power Blinking: Module in loopback mode
F/O AN "F/O-Auto-Neg"	Green	Port configured for manual negotiation	On: Fiber port configured for AN Blinking: Fiber port configured for AN but establishes link in manual mode
F/O Speed 100 "F/O-100"	Green	Not connected at 100Mbps	On: Fiber port linked at 100Mbps Blinking (1Hz): Link activity at 100Mbps
F/O Speed 1000 "F/O-1000"	Green	Not connected at 1000Mbps	On: Fiber port linked at 1000Mbps Blinking (1Hz): Signal detected but port unable to establish a link Pattern Blinking: AN remote Fault bit detected
UTP Duplex "UTP-FDX"	Green	Half-Duplex	On: UTP port in Full-Duplex
UTP AN "UTP-Auto-Neg"	Green	Port configured for manual negotiation	On: UTP port configured for AN Blinking: UTP port configured for AN but in manual mode
UTP Speed 100 "UTP-100"	Green	Not connected at 100Mbps	On: UTP port linked at 100Mbps Blinking (10Hz): Link activity
UTP Speed 1000 "UTP-1000"	Green	Not connected at 1000Mbps	On: UTP port linked at 1000Mbps Blinking (10Hz): Link activity
UTP Speed 10 "UTP-100" + "UTP-1000"	Green	Not connected at 10Mbps	On: UTP port linked at 10Mbps Blinking (10Hz): Link activity Pattern Blinking: Detecting "remote_fault" (AN) on UTP port
+UTP Auto-Neg" + "UTP-100" + "UTP-1000"	Green	-	Blinking (1Hz): Unable to establish AN link on the UTP port

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NOTE: Remove safety ground screw when installing the module in the 14-Module Chassis or when using it with the DC-DC Converter (Model # LMC204A)

WARNING!
Before inserting the Power Adapter, verify that the power on the unit is appropriate for your AC line voltage source.

INSTALLATION PROCEDURE

- Configure the appropriate FlexPoint Triple Speed DIP-Switch settings.
- Connect the UTP port via a Category 5 or better cable to a 10BASE-T, 100BASE-TX or 1000BASE-T Ethernet device.
- When using fixed fiber port models, connect the appropriate multimode or single-mode fiber cable to the fiber port of the installed module. It is important to ensure that the transmit (Tx) is attached to the receive side of the device at the other end and the receive (Rx) is attached to the transmit side.
- When using the SFP model, insert the SFP Fiber transceiver into the Port 1 SFP receptacle on the Triple Speed.

NOTE: The release latch of the SFP Fiber transceiver must be in the closed (up) position before insertion.
Connect the appropriate multimode or single-mode fiber cable to the fiber port of the installed module.

LOOPBACK

The FlexPoint Triple Speed has the capability to provide loopback to aid in installation and maintenance. A DIP-switch is used to enable loopback on the module (see page 6). Figure 1 shows the module in normal and loopback modes.

NOTE: Connecting two converters with both set to RFD mode is not supported and will cause a "deadly embrace" lockup.

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SPECIFICATIONS

Model Type	Triple Speed
Protocols	IEEE 802.3 10BASE-T, 100BASE-TX, 1000BASE-T, 100BASE-FX, 1000BASE-X
Frame Size	10,240 byte max. frame size
UTP Cable	RJ-45, Category 5 and higher
Fiber Cables	Multimode: 50/125, 62.5/125, 100/140µm Single-mode: 9/125µm
UTP Connectors	RJ-45
Fiber Connectors	LC (SFP), SC, ST
DIP-Switches	Fiber: Auto-Neg, 10, 100, 1000, FDX/HDX, Pause En/Dis Loopback, Link Seg, Link Prop, Remote Fault Det.
LED Displays	Power, Fiber AN, Fiber Speed/Activity, UTP Speed/Activity, Full/Half-Duplex
Dimensions	W: 3.0" x D: 4.0" x H: 1.0"
Weight	6 oz. (without power adapter)
Compliance**	UL, CE, FCC Class A
Power Requirements	Barrel Connector Nominal Voltage: 9VDC Voltage Range: 5.0 to 32.0VDC Nominal Power: 0.3A @ 9VDC Maximum Power: 1A @ 9VDC Molex Connector Nominal Voltage: 5VDC Voltage Range: 5.0 to 32.0VDC Nominal Power: 0.5A @ 5VDC Maximum Power: 0.75A @ 5VDC
Temperature	0 to 50°C
Humidity	5 to 95% (non-condensing)
Altitude	-100m to 4000m
MTBF (Hours)	Module without Power Adapter: 900,000 Module with Power Adapter-1: 250,000 Module with Power Adapter-2: 100,000

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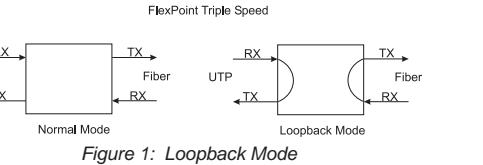


Figure 1: Loopback Mode

LINK MODES

In order to accommodate different user needs, the Triple Speed supports four different link modes (see Fig. 2).
In Link Segment (LS), a port transmits a Link signal independently of any received Link at any other port. For example, the UTP transmits a Link regardless of the fiber receiving a Link [Fig. 2(a) & (b)].

In Link Propagate (LP), a port transmits a Link signal only when receiving a Link at its other port. For example, the UTP transmits a Link only when receiving a Link at the fiber port [Fig. 2(c)].

In Remote Fault Detection + Link Segment (RFD+LS), the fiber port transmits a Link signal only when receiving a Link at the fiber port. As a result, fiber faults (no Link received at the fiber) are looped-back and can be reported to the network core [Fig. 2(d)].

In Remote Fault Detection + Link Propagate (RFD+LP), the UTP port transmits a Link signal only when receiving a Link at the fiber port. The fiber port transmits a Link signal only when receiving Link signals at both the fiber port and the UTP port. As a result, fiber faults (no Link received at the fiber) are propagated forward and looped back for fault reporting at both the network core and the customer location [Fig. 2(e)].

NOTE: Connecting two converters with both set to RFD mode is not supported and will cause a "deadly embrace" lockup.

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TRADEMARKS

All applied-for and registered trademarks are the property of their respective owners.

FEDERAL COMMUNICATIONS COMMISSION AND CANADIAN DEPARTMENT OF COMMUNICATIONS RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to be cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du Canada.

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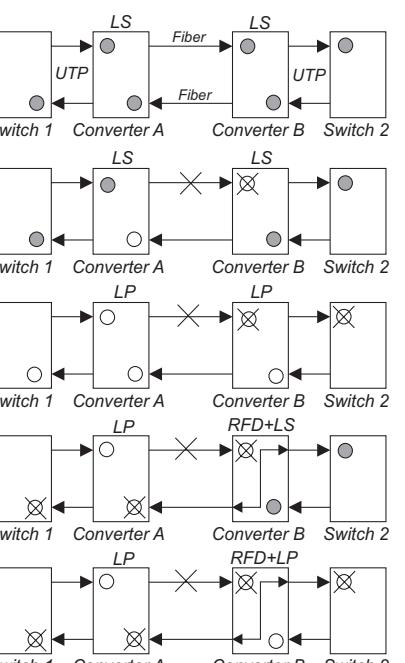


Figure 2: Link Modes

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NORMAS OFICIALES MEXICANAS (NOM) ELECTRICAL SAFETY STATEMENT

- Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
- Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
- Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
- Todas las instrucciones de operación y uso deben ser seguidas.
- El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
- El aparato eléctrico debe ser usado únicamente con carritos o pedestalas que sean recomendados por el fabricante.
- El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
- Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
- El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquear la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
- El equipo eléctrico debe ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
- El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

- Precación debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
- Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados nipellados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
- Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
- Servicio por personal calificado deberá ser provisto cuando:
A: El cable de poder o el contacto ha sido dañado; u
B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
C: El aparato ha sido expuesto a la lluvia; o
D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
E: El aparato ha sido tirado o su cubierta ha sido dañada.

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DIP-SWITCHES

F/O Manual/Auto "Man/AN" DIP-Switch

Setting this DIP-Switch to Auto-Negotiate "AN" (factory setting) enables the fiber port to determine duplex mode automatically.

If the connected device cannot provide the proper signal to indicate its own mode of operation, set this DIP-Switch to Manual "MAN." This feature allows connections with legacy manual negotiation devices that do not support auto-negotiation.

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F/O Speed "100/1000" DIP-Switch:

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